4.1 Meteorology/Air Quality

SIGNIFICANCE CRITERIA

The project would have a significant effect on the environment if it would:

- Violate or contribute substantially to an existing or projected violation of any ambient air quality standard
- Violate any regulatory requirement of the MCAPCD, CARB, or EPA
- Expose sensitive receptors to substantial pollutant concentrations
- Expose the public to objectionable odors
- Substantially alter air movement, moisture, temperature, or local or regional climate
- Create a potential public health hazard

METHODOLOGY

Air impact analysis for the project is divided into potential emissions from construction and from operations. Potential emissions from individual project components are considered. Impacts on the immediate vicinity and larger area to which emissions may travel, are considered and compared to baseline conditions provided in Section 3.1 Meteorology/Air Quality. Mitigation Measures are incorporated as necessary to minimize emissions of particulate matter less than 10 microns (PM_{10}) because the Northeast Plateau Air Basin (NPAB) is classified as "nonattainment" for PM_{10} (see Section 3.1 Meteorology/Air Quality).

IMPACT OVERVIEW

The primary air quality impact associated with the project would be localized, short-term impacts of construction, including dust and emissions from the operation of diesel-fueled engines. The primary criteria air pollutant of concern during construction of the proposed action would be particulate matter in the form of fugitive dust. During construction, fugitive dust emissions would occur from construction vehicles and equipment creating dust. Wind erosion may occur during the construction phase in areas where the soil is disturbed along the pipeline route. EPA's AP-42 ("Compilation of Air Pollutant Emission Factors") states that the dust deposition distance from 30-100 μm diameter fugitive dust is generally within a few hundred feet of the activity with a wind velocity of 10 mph. Smaller particles, including PM_{10}, are much more likely to have their settling rates retarded by atmospheric turbulence. A water truck would be used on site to control fugitive dust during construction. Use of the water truck would reduce dust emissions to less than significant amounts. Another area of concern is scattering of particles during transport and dumping of bedding material, which would be potentially significant without mitigation. Mitigation measures are incorporated to reduce all significant and potentially significant impacts to less than significant levels.

EFFECTS OF ALTERNATIVE A

Construction Emissions

Construction Traffic. Exhaust emissions of oxides of nitrogen (NO_x), ROG, carbon monoxide (CO), sulfur dioxide (SO_2), and PM_{10} would occur from internal combustion engines in dump trucks, excavators and other heavy construction equipment, and from construction workers' cars and supply trucks traveling to and from the work site. It is estimated that no more than a total of 53 tractor-trailer loads of materials would be needed for the project. The proposed action would not increase concentrations of criteria pollutants in excess of air quality standards because relatively few pieces of heavy equipment and small labor forces would be required for this project. Less than significant impacts would result from vehicle exhaust emissions. Dust generation from construction traffic on unpaved roads would create a potentially significant impact on the immediate area along the unpaved roads without mitigation. Some residents exist along Highway 54, which is an unpaved route. Mitigation Measure 4.1-1 would reduce potential dust generation along unpaved roads to a less than significant level.

Food Service/Laundry Building. A backhoe would be used to prepare the site of the food service/laundry building. A concrete truck would be used to construct the building. Dust generation may affect nearby residences and communal areas. This would be a significant impact without mitigation. Dust impacts from construction would be less than significant with the application of water for dust control as required under Mitigation Measure 4.1-2. Pollutant emissions from construction equipment would not be significant because only a few pieces of heavy equipment would be in operation during working days and daylight hours. The equipment would be used for about 3.5 months.

Mechanical and Control Building. A backhoe would be used to prepare the site of the mechanical building. A concrete truck would also be used to construct the building. Dust generation from the construction would be a significant impact without mitigation. A water truck would be used on site to control fugitive dust during construction, as required under Mitigation Measure 4.1-2. Dust impacts from construction and vehicle emissions would be less than significant after mitigation.

District Heating System. Distribution pipelines would be constructed with a backhoe or excavator to trench the distribution pipelines. A 2-foot wide by 4-foot deep trench would be excavated. Dump trucks would be used to haul away excess excavated material and bring in bedding for the pipeline. The excess material would be taken to an agricultural field nearby on I'SOT controlled property that needs fill material. Trenching the pipeline route would create fugitive dust along the residential and communal areas within a few hundred feet of the route. Watering would reduce this impact to less than significant. Transport of bedding material would result in potentially significant impacts without mitigation because particulate matter may scatter along the transport route. Implementation of Mitigation Measure 4.1-3 below would reduce scattered particulate matter to less than significant amounts. Mitigation Measure 4.1-2 would reduce impacts of dumping the excess excavated material to a less than significant level. Vehicle emissions would not be significant.

Discharge Pipeline. The proposed route for the discharge pipeline would be located mostly in agricultural fields away from residents. The route crosses fields, runs along a levee road, and traverses a small portion of wetlands owned or controlled by the I'SOT community (see Figure 2.2-5 for a map of the proposed route). Trenching the 5,400-foot pipeline route would create fugitive dust along the fields, levee road, and possibly the wetlands. Watering would reduce this impact to a less than significant level. Transport and dumping of bedding and trenching material may scatter particulate matter along the transport route and dumping area, which would be on I'SOT property. This impact would be potentially

significant without mitigation. Implementation of Mitigation Measures 4.1-2 and 4.1-3 below would reduce scattered particulate matter to less than significant levels.

Operation Emissions

Geothermal Well. An open, drip-proof motor set at the surface would power the pump at the well. This motor would run on electricity. No impacts on air quality would occur from operation of the motor at the geothermal well.

Backup Boiler System. A boiler is a combustion system that burns continuously fed fuel to heat a water stream to provide steam at any desired temperature and pressure. A standard package industrial propane boiler would be located in the mechanical and control building and would discharge through a short stack to the atmosphere. The boiler would be used during periods of extreme cold weather or if the well capacity is less than the heat demand. The ideal hydrocarbon products of combustion in which a fossil fuel is burned are water vapor and carbon dioxide. All other products are considered pollutants, consisting mainly of NO_x, CO, Precursor Organic Compounds in the form of unburned hydrocarbons, SO_x (Oxides of Sulfur), and PM. Use of the propane boiler would result in low pollutant emissions. The propane boiler would require a 1500- to 2000-gallon storage tank to provide one week's backup operation at peak rated rates.

Peak hot water usage may impose an additional heat demand of up to 600,000 Btu/hr, assuming a cold water temperature of 80°F and a peak flow of 30 gpm. The boiler would be a Raypak #RA1826 Indoor Propane potable water heater. It would have an output of about 1.8 million Btu (1,825.6 MBH) (Merrick 2002; Solberg 2002). This would be a peaking boiler; it would heat the incoming water from 150-160°F to a temperature that would satisfy the heating load at the residences. The MCAQMD does not have regulations specific to propane boiler emissions (Haas 2002). As a comparison, the Bay Area Air Quality Management District (BAAQMD) does not issue permits for propane boilers up to 10 million Btu as provided under Exemption 2-1-114 of the BAAQMD's Permit Handbook. The boiler would be used 1-2% of the year when temperature drops below 7°F. Use of the boiler would have less than significant impacts on air quality.

I'SOT uses about 28,710 gallons per year of propane for residential space heating and domestic hot water (Brown 2002). Implementation of the proposed project would result in decreasing consumption of propane for residential space heating and domestic hot water in Canby, thereby decreasing propane-related emissions in Canby.

Water Circulation Pumps. The pumps for water circulation would be sized for up to 80 gpm each with three-horsepower high efficiency inverter motors. These motors would run on electricity. No impacts on air quality are anticipated from operation of the motors for water circulation.

Conformity Analysis

All proposed federal actions must comply with the EPA rule on "Determining Conformity of General Federal Actions to State or Federal Implementation Plans" (40 CFR 93, Subpart B). This regulation requires that an analysis of the conformity of the proposed federal action be prepared in federal nonattainment or maintenance areas for each pollutant for which the project area is designated as nonattainment or maintenance area, if the project emissions exceed thresholds listed in the regulation. The emissions of all pollutants are expected to be below the thresholds listed in the regulation for nonattainment or maintenance areas and would not be regionally significant. No further conformity analysis is required.

MITIGATION MEASURES

Mitigation Measure 4.1-1

I'SOT will limit all construction vehicles to 25 miles per hour or less on all unpaved roads to minimize dust generation.

Mitigation Measure 4.1-2

I'SOT will ensure that watering for dust suppression shall be applied throughout the construction area during the construction period. I'SOT will also ensure that watering is applied for dust suppression at the dumpsites for excavated material during dumping of excess excavated material.

Mitigation Measure 4.1-3

I'SOT will ensure that dump trucks used to transport bedding and trenching material shall be equipped with adequate cover material to prevent particulates from scattering along the transport route. I'SOT will also ensure that this cover material shall be used when transporting project-related bedding and trenching material. In addition, I'SOT shall ensure that watering for dust suppression shall be performed at dumpsites for excavated material during dumping of excess excavated material.

EFFECTS OF ALTERNATIVES B (NO ACTION)

If the project were not constructed due to lack of DOE funding, there would be no adverse effects on air quality from Alternative B, the "No Action" alternative; however, the project could proceed without DOE funding contingent upon alternative funding, with effects from Alternative A potentially worse without DOE participation because no mitigation would be required (except NPDES required items). The following measures would not be implemented without DOE involvement: 4.1-1, 4.1-2 and 4.1-3. Without funding by DOE, I'SOT would not be reimbursed for costs resulting from permitting efforts, engineering consultation, and system installation costs. No data gathering system would be installed for DOE research and development (R&D) purposes.